Claims

1.   Sample observation method intended for observing samples, characterized by:

capturing a view of a desired area of a sample by image pickup means and displaying the thus acquired image on a first screen;

prompting the operator to select an area anywhere on the image, the area to be magnified and observed within the image displayed on the screen;

capturing a view of the selected area of the sample to be magnified and observed, by the image pickup means, and acquiring a magnified image of the view; and

displaying the magnified image on a second screen.

2.   Sample observation method intended for observing samples, characterized by:

adjusting the position of a sample so that a desired area of the sample will fall within the field of view of the image pickup means;

capturing a view of the desired area of the sample zoomed-in by first scale factor, thus acquiring a first image;

displaying the first image on a first screen;

superimposing an area to be magnified and observed within the first image displayed on the first screen on the screen;

capturing a view of the area to be magnified and observed, by the image pickup means, at second scale factor that is larger than the first scale factor, thus acquiring a second image; and

displaying the second image on a second screen.

3. Sample observation method according to claim 1 or 2, characterized in that the image pickup means is a scanning electron microscope.

4. Sample observation method intended for observing samples by using a scanning electron microscope, characterized by:

adjusting the position of a sample so that a desired area of the sample will fall within the field of view of the scanning electron microscope;

capturing a view of the desired area of the sample by the scanning electron microscope at first scale factor, thus acquiring a firs image;

displaying the first image on a first screen;

comparing the first image displayed on the first screen with a reference sample image;

determining an area to be magnified and observed in the first image displayed on the first screen, based on the above comparison; and

displaying on a second screen a magnified image of the area thus determined to be magnified and observed.

5. Sample observation method according to ~~any one of claims 1, 2, 3, and 4~~, *claim 1* characterized in that the desired area of the sample is an area including a defect on the sample that has been detected by inspection with a surface defect inspection apparatus.

6. Sample observation method according to ~~any one of claims 1, 2, 3, and 4~~, *claim 1* characterized in that the first screen and the second screen appear on different display screens.

7. Sample observation method according to ~~any one of claims 1, 2, 3, and 4~~, *claim 1* characterized in that the first screen and the second screen appear on a same display screen.

8. Sample observation method characterized by:

acquiring a reference sample image not including any defect on a sample by capturing an image of the sample, based on the information on a defect developed on the sample and detected by an inspection apparatus;

acquiring a defective sample image including the defect on the sample by capturing a image of the sample, based on the information on the defect developed on the sample and detected by the inspection apparatus

locating the defect on the defective sample image by comparing the reference sample image and the defective sample image;

capturing a magnified view of the local area where the located defect exists within the area whose view has been captured as the defective sample image, thus acquiring a magnified image of the defect; and

displaying the magnified image of the defect on a screen.

9. Sample observation method characterized by:

acquiring a reference sample image not including any defect on a sample by capturing an image of the sample, based on the information on a defect developed on the sample and detected by an inspection apparatus;

adjusting the position of the sample so that the defect will fall within the field of view of image capture, based on the information on the defect developed on the sample and detected by the inspection apparatus;

acquiring a defective sample image including the defect on the sample by capturing an image of the sample in the adjusted position;

locating the defect on the defective sample image by comparing the reference sample image and the defective sample image;

capturing a magnified view of the local area where the located defect exists within the field view of image capture, thus acquiring a magnified image of the defect; and

displaying the magnified image of the defect on a screen.

10. Sample observation method characterized by:

acquiring a reference sample image not including any defect on a sample by capturing an image of the sample, based on the information on a defect developed on the sample and detected by an inspection apparatus;

acquiring a defective sample image including the defect on the sample by capturing an image of the sample, based on the information on the defect developed on the sample and detected by the inspection apparatus

locating the defect on the defective sample image by comparing the reference sample image and the defective sample image;

capturing a magnified view of the local area where the located defect exists within the area whose view has been captured as the defective sample image, thus acquiring a magnified image of the defect;

erasing the background from the magnified image of the defect; and

displaying on a screen the magnified image of the defect from where the background has been erased.

11. Sample observation method according to *claim 8* ~~any one of claims 8, 9, and 10~~, characterized in that the reference sample image and the defective sample images are the images of the sample captured in secondary electrons reflected from the sample irradiated with charged particle beams.

12. Sample observation equipment intended for observing samples, characterized by comprising:

image pickup means to capture a view of a sample, thus acquiring an image of the sample;

storage means to receive and store data about a desired area of the sample, the view of the area to be captured by the image pickup means, from the external;

position control means to control the position of the sample toward the image pickup means, based on the data

about the desired area of the sample stored into the storage means;

display means to display images of the sample acquired by being captured by the image pickup means; and

arithmetic control means to locate a defect on the sample by comparing a plurality of images of the sample zoomed-in by first scale factor and captured by the image pickup means after the sample is positioned by the position control means and make the display means display an image of the defect zoomed-in by second scale factor that is larger than the first scale factor, together with an image including the defect captured at the first scale factor.

13. Sample observation equipment intended for observing samples, characterized by comprising:

storage means to receive and store the information on a defect developed on a sample acquired through inspection with an external defect inspection apparatus from the defect inspection apparatus;

image pickup means to capture a view of the sample, thus acquiring an image of the sample;

position control means to control the position of the sample, based on the information on the defect developed on the sample stored into the storage means;

defect locating means to locate the defect by comparing an image of the sample not including the defect and an image of the sample including the defect, zoomed-in by first scale factor and captured by the image pickup means after the sample is positioned by the position control means, and display the image including the defect on a screen; and

magnified defect display means to display a magnified image of the defect located by the defect locating means, the image captured by the image pickup means at second scale factor that is larger than the first scale factor.

14. Sample observation equipment intended for observing samples, characterized by comprising:

image pickup means to capture a view of a sample, thus acquiring an image of the sample;

position control means to control the position of the sample so that a defect on the sample will fall within the field of view of the image pickup means, based on the information on the defect on the sample acquired through inspection with an external defect inspection apparatus;

defect locating means to locate the defect by comparing an image of the sample not including the defect and an image of the sample including the defect, zoomed-in by first scale factor and captured by the image pickup

means after the sample is positioned by the position control means, and display on a screen the image of the sample including the defect thus located; and

magnified defect display means to display a magnified image of a local area of the sample corresponding to the location of the defect on the image of the sample including the defect displayed on the screen of the defect locating means, the image captured by the image pickup means at second scale factor that is larger than the first scale factor.

15. Sample observation equipment according to *Claim 12* ~~any one of claims 12, 13, and 14,~~ characterized in that the image pickup means is a scanning electron microscope.

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